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# GOOSE RAISING



Farmers' Bulletin No. 767

U. S. DEPARTMENT OF AGRICULTURE

**Geese can be raised** successfully in all parts of the United States. The largest numbers are produced in the Middle Western and North Central States. Their diet may consist largely of grass during the growing season. Geese are the closest of grazers; therefore, they are most economically produced where good grass range or green forage is available.

Geese are usually raised in small flocks on general farms. They can be housed very cheaply, as breeders require little if any housing, and growing geese are usually raised to market age without shelter.

The best markets for geese are in cities which have a large cosmopolitan population. Market geese bring the highest prices at Thanksgiving and at Christmas, although they do not bring as much as turkey hens and capons.

Washington, D. C.

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# GOOSE RAISING

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## GOOSE PRODUCTION

Geese are raised in all parts of the United States, but are produced in the largest numbers in the West North Central and East North Central States. According to the 1950 census 1,160,045 geese were raised to market age in the United States in 1949, a small increase over the 1,152,299 reported for 1939. Minnesota produced about 125,000; Iowa, 112,000; Wisconsin, 83,000; Illinois, 70,000; South Dakota, 68,000; Missouri, 67,000; Mississippi, 62,000; Arkansas, 57,000; North Dakota, 45,000; and Ohio and Michigan each about 40,000.

Geese make up about 0.2 percent of the poultry raised in the United States and number about one-ninth as many as the ducks produced. The 1950 census showed that geese were raised on less than 2 percent of the farms in this country. Commercial production of geese has developed and there has been considerable commercial production and sale of day-old goslings. Geese are very hardy and are the closest grazers known. A green range reduces both the cost of raising young geese and of feeding breeding stock and is considered essential by most producers of geese.

## BREEDS

Geese have been domesticated for many centuries. The most common breeds of geese are Toulouse, Emden, African, Chinese, Canada, Pilgrim, Buff, Sebastopol, Egyptian, and White Roman, all but the last being recognized as standard in this country.

The Emden and the Toulouse, the most popular breeds in this country, are also the heaviest breeds. They are descended from the wild Graylag. The Chinese is probably descended from the wild Chinese, while the African probably comes from both the wild Chinese and the wild Graylag. These four are the most popular breeds raised for meat on farms.

Most of the geese raised on general farms weigh less than the standard weights recognized for these breeds. Both standard breeds and crosses of these breeds are raised for market. One of these popular crosses is the Emden gander with the White Chinese goose. This cross looks much like the Emden and does not show the large knob of the Chinese. The absence of this knob makes the crossbred more salable in kosher markets. Geese are kept primarily for the production of flesh and feathers, although their eggs are occasionally used for cooking.

### TOULOUSE

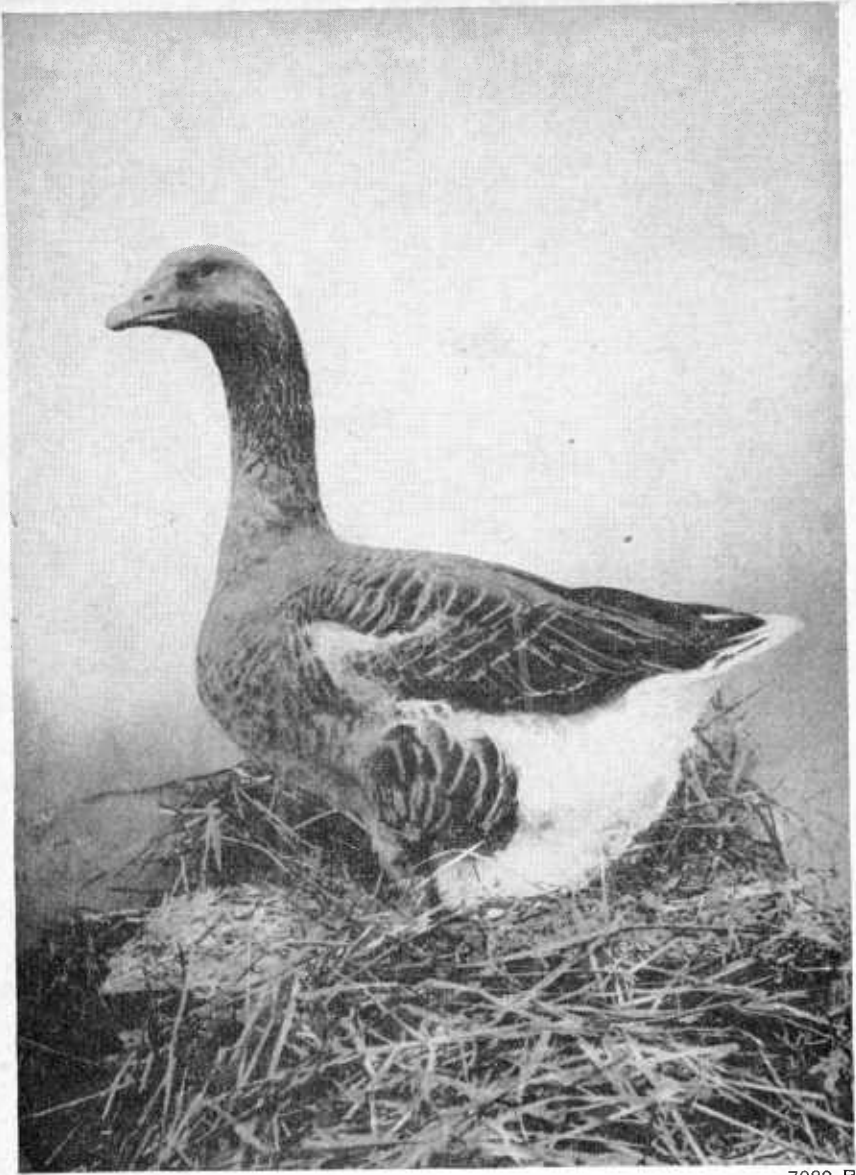
The Toulouse goose (fig. 1) derives its name from the city of Toulouse in southern France, a territory noted for its geese. The weights in pounds are as follows: Adult gander 26, adult goose and young gander 20, young goose 16. This breed has a broad and deep body and is loose-feathered, a characteristic which gives it a massive appearance. The color of the plumage is dark gray on the back, gradually shading to light gray edged with white on the breast, and to white on the abdomen. The eyes should be dark brown or hazel, the bill pale orange and the shanks and toes a deep reddish orange. The female resembles the male but is smaller.

The standard for this breed calls for a dewlap or fold of skin under the throat. This dewlap has no economic value but is recognized as an indication of quality in exhibition stock. Strains referred to as mammoth dewlap Toulouse (fig. 2) are very large and are produced primarily for exhibition. The Toulouse is a fair layer, averaging from 25 to 40 or more eggs a year, is docile, grows rapidly, and makes a good market bird. Its dark pinfeathers, however, make it a less attractive market goose than the Emden. Egg production is low in most flocks, but can be greatly improved by breeding.

### EMDEN

The Emden—formerly spelled Embden—was one of the first breeds of geese imported into the United States, where it was known at first as the Bremen, named after the city from which early importations were made (fig. 3). The breed, however, originated in Hanover, Germany. The breed name is from the German city, Emden, that made later exportations of the geese to England. Emden has been adopted as standard for this breed in the United States, although the spelling Embden has been and still is commonly used.

The standard weights, in pounds, are as follows: Adult gander 26, adult goose and young gander 20, young goose 16. The Emden is a large white goose, more sprightly, and much tighter feathered than the Toulouse. It therefore appears more upstanding. The plumage is pure white. The Emden is a fairly good layer, production depending greatly on the breeding and selection of the flock. An average egg production of from 35 to 40 or more eggs is usually obtained from



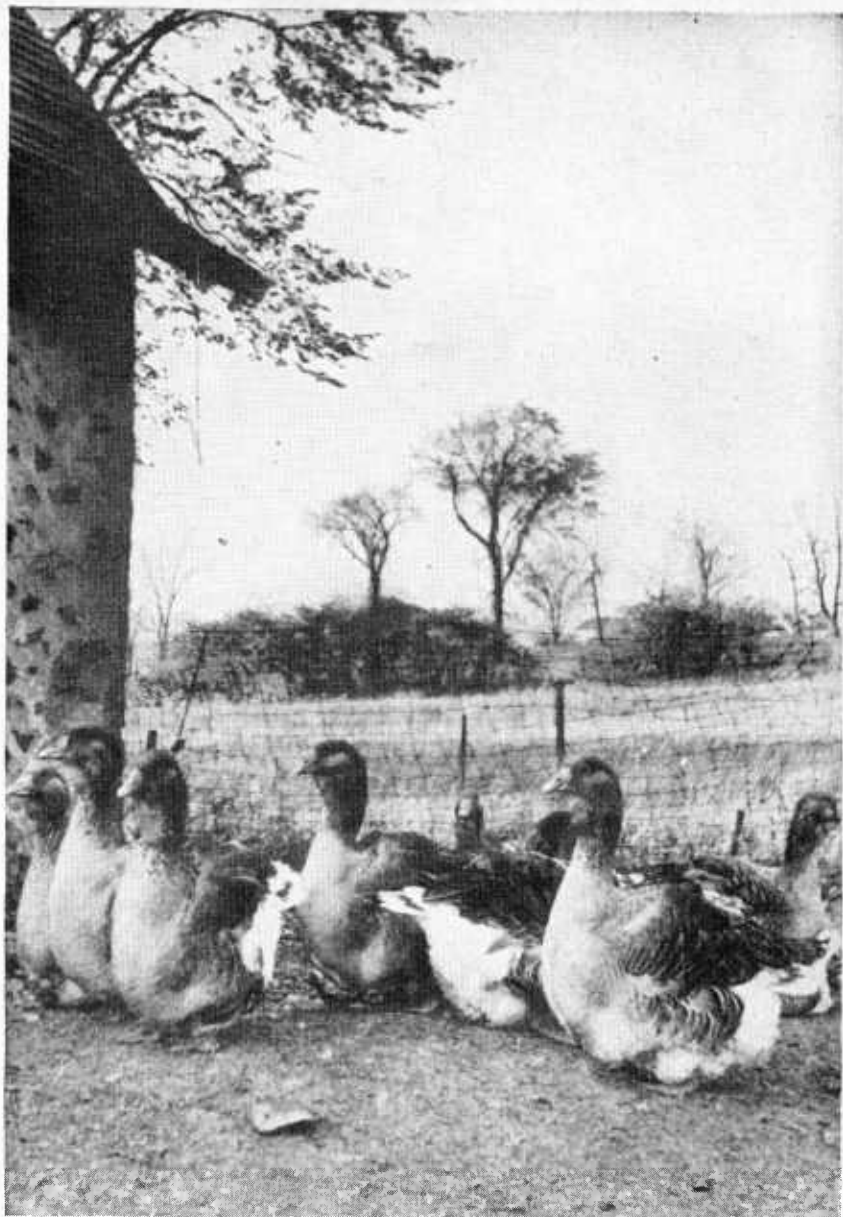
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FIGURE 1.—Toulouse goose.

flocks of mature breeding geese. The Emden is usually a better sitter than the Toulouse. The breed is probably the most popular market goose. It is a good breeder, has white pinfeathers, is a rapid grower, and matures early.

#### AFRICAN

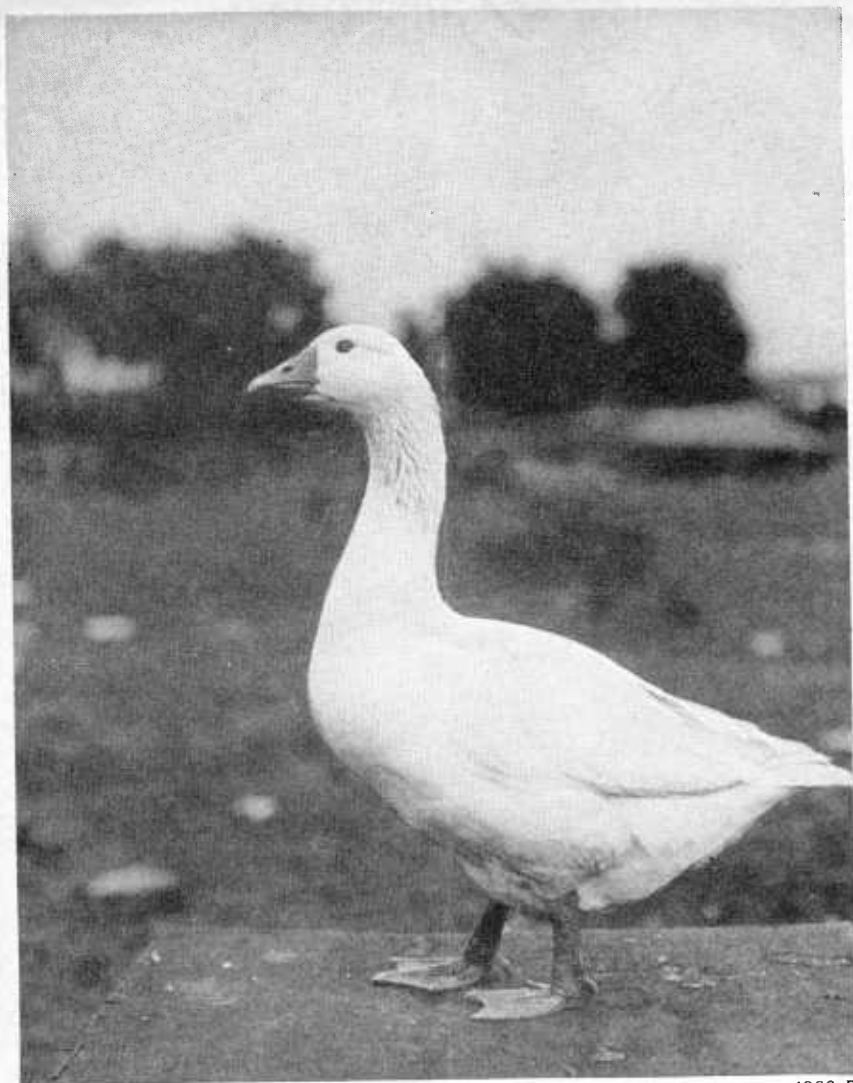
The African (figs. 4 and 5), is a gray goose with a distinct brown shade. It probably originated in India either from the wild Chinese or from a cross of that goose with the wild Graylag, though originally



80946-B

FIGURE 2.—Mammoth dewlap Toulouse geese ranging from 6 to 8 months in age.

reported to have come from **Africa**. It has a distinctive knob or protuberance on its head. Its carriage is more erect than that of the Toulouse and its body more nearly oblong and higher from the ground. The standard weights, in pounds, are: Adult gander 20, adult goose 18, young gander 18, young goose 14. The head is light brown, the knob and bill are black, the eyes are dark brown, the plumage ashy brown



4960-B

FIGURE 3.—Emden gander.

on the wings and back and light ashy brown on the neck, breast, and underside of the body. The African is a very handsome breed, is a good layer and grows well, but is not so popular or so desirable for market production as either the Emden or the Toulouse. The dark beak and dark pinfeathers of this breed make it less suitable for market. It is a rapid grower and matures early.

#### CHINESE

The Chinese goose, of which there are two standard varieties, the Brown (fig. 5) and the White, originated in China and probably came from the wild Chinese. This goose is much smaller than the

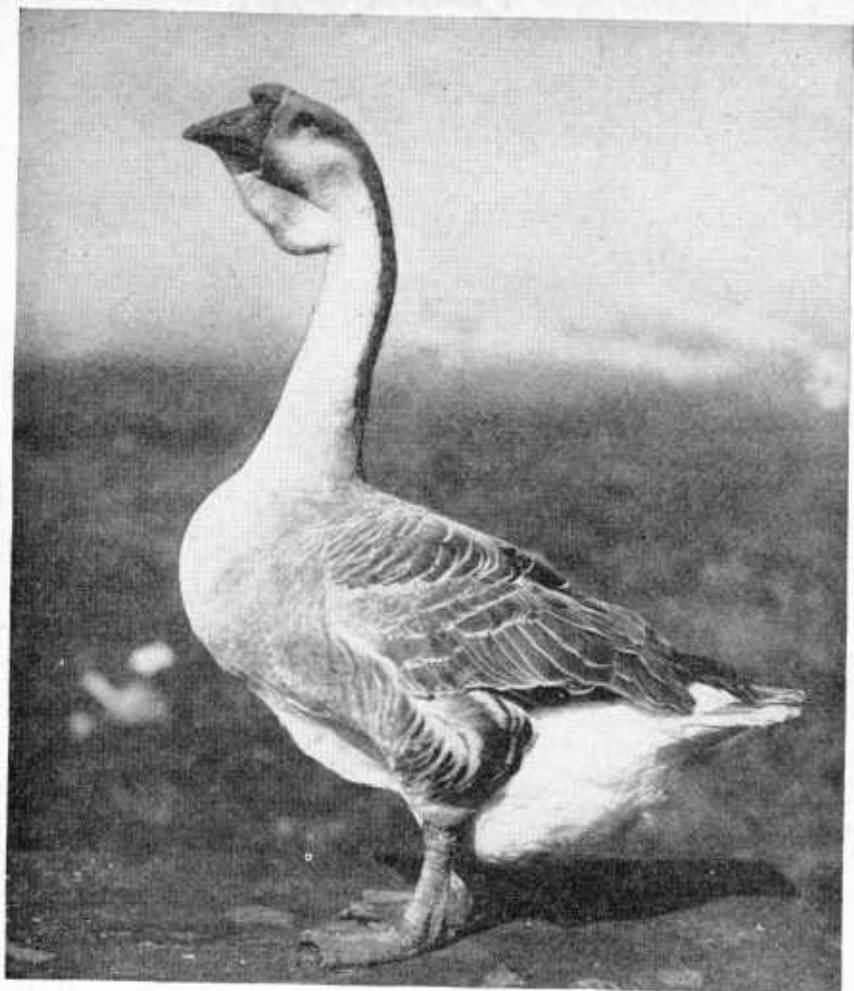
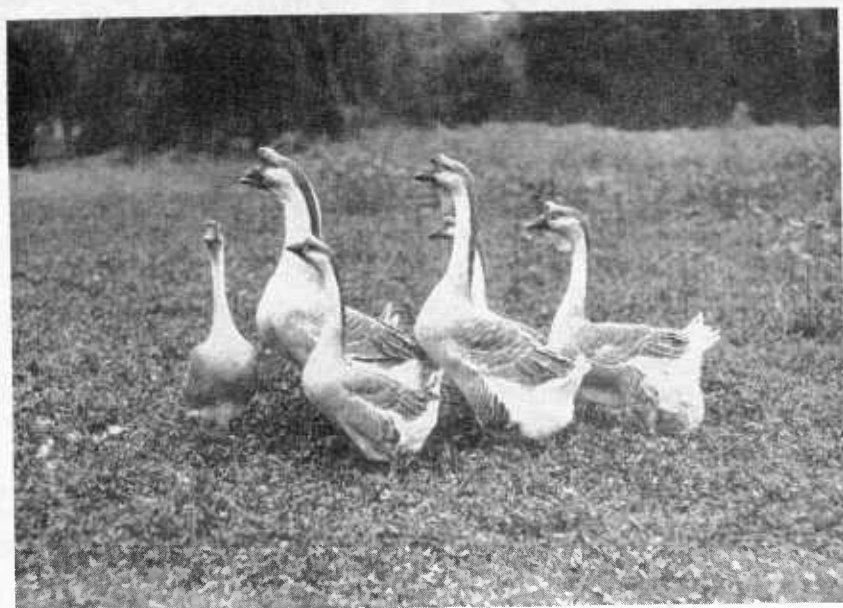


FIGURE 4.—African gander.

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other standard breeds and more swanlike in appearance. The standard weights in pounds are as follows: Adult gander 12, adult goose and young gander 10, young goose 8. The Brown Chinese goose has a russet-brown color which is lighter on the underside of the body, a brown head, a dark slate knob, and a black or dark slate bill. The White Chinese goose has pure-white plumage and an orange-colored bill and knob. Both varieties mature early and are better layers than the other breeds, usually averaging from 40 to 65 or more eggs. Chinese geese will start laying earlier than the larger breeds, the White being especially noted for its good egg production. Its small size makes this goose well adapted for consumption in homes. This breed is not kept as extensively for commercial market production as the Emden and Toulouse. It grows rapidly, is a very attractive breed, makes a desirable small-type market goose, and is very popular as an exhibition and ornamental breed.

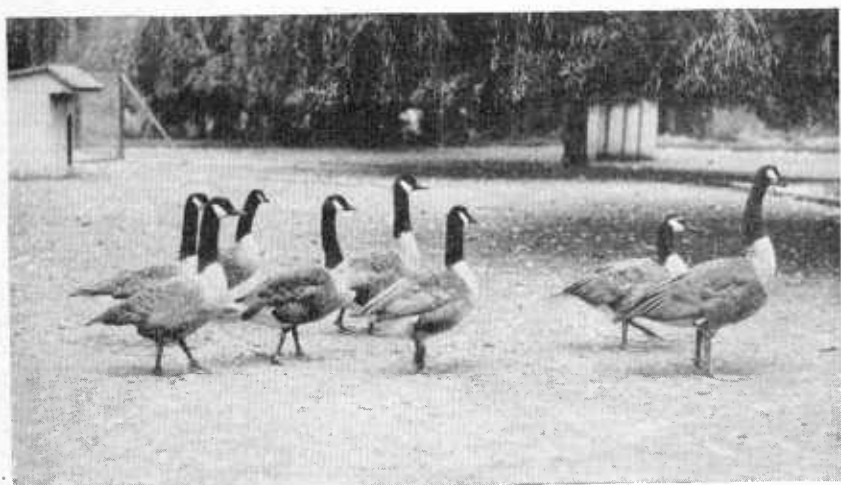


18607-B

FIGURE 5.—Flock of African and Brown Chinese geese. The two small geese to the left and front are Brown Chinese.

#### CANADA

The Canada or wild goose (fig. 6), which is the American wild goose, is of a different species from the other breeds of geese discussed in this bulletin and can be kept in captivity only by close confinement. They are used to ornament private and public parks and are also in demand by hunters to use as decoys. Their standard weights are the same as those of the Chinese geese, but their conformation is entirely different. They have long and snakelike heads, long and



18612-B

FIGURE 6.—Flock of Canada or wild geese.

slender necks, and oblong bodies, with horizontal carriage. This breed does not have the economic value of the domestic breeds of geese. They mate only in pairs, are late maturing, and lay very few eggs. The wild gander is sometimes used to cross with domestic breeds, producing the so-called mongrel goose, which is a hybrid, usually sterile, and producing a fine quality of flesh.

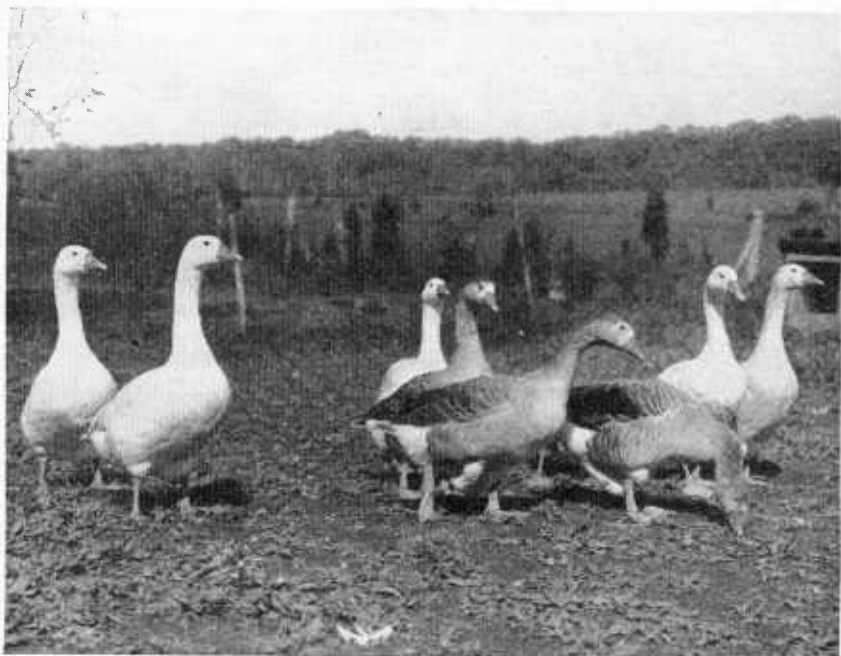
In color the body of the Canada goose is gray, the breast light gray, and the underside of the body from the legs to the tail is white. The bill, eyes, head, neck, and tail are black, except for a white stripe on the side of the face.

#### PILGRIM

The Pilgrim (fig. 7) is a small-type goose which has been raised in this country for some time, but has not been widely distributed. It was recognized as a standard breed in 1939. A unique feature of this breed is the difference in plumage and eye color of the sexes. The adult gander is pure white and has blue eyes, while the goose is gray and white with dark hazel eyes. The head and neck are light gray in the young goose and white in the adult goose. In day-old goslings, the male is creamy white and the female gray. The standard weights in pounds are as follows: Adult gander 14, adult goose 13, young gander 12, young goose 10. This breed makes a good small-type goose for market.

#### BUFF

The Buff (fig. 8) was made a standard breed only in 1947, but has been raised on farms in this country for some years. The standard weights in pounds are: Adult gander 18, adult goose and young gander



81864-B

FIGURE 7.—A flock of Pilgrim geese. The males are white; the females are gray.

16, young goose 14. It appears to have fair economic qualities as a market goose, but only a small number have been raised for market. The color varies from dark buff on the back to a very light buff on the breast and from light buff to almost white on the under part of the body.

#### SEBASTOPOL

The Sebastopol is an ornamental goose which is very attractive because of its soft plumelike feathering. It is white in color and has long, curved, profuse feathering on the back and sides with short, curled feathers on the lower part of the body. This breed is primarily an ornamental breed. The standard weights, in pounds, are: Adult gander 14, adult goose and young gander 12, young goose 10.

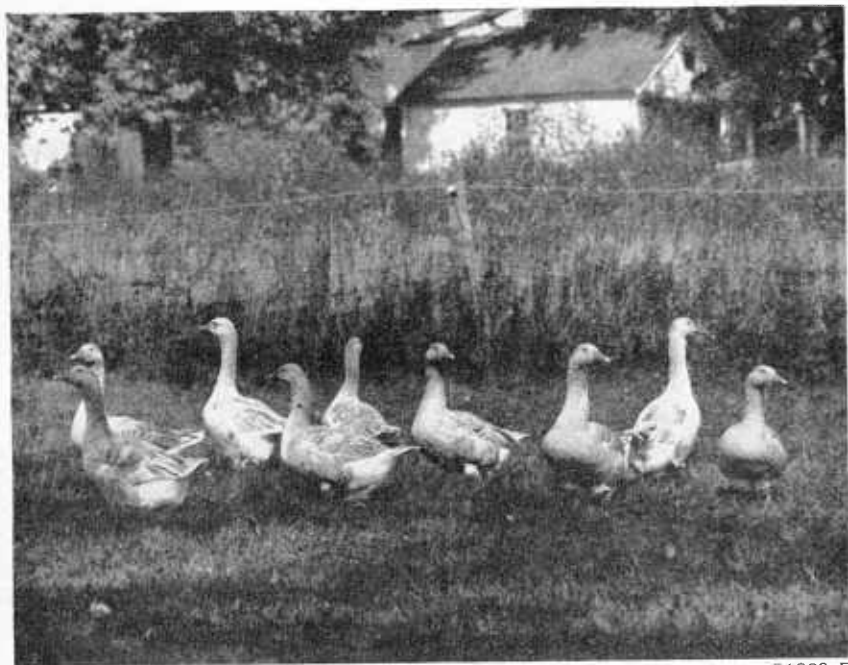


FIGURE 8.—Breeding flock of Buff geese.

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#### EGYPTIAN

The Egyptian is a long-legged, but very small, bright-colored goose, kept only for ornamental purposes and rarely seen on farms in this country. It is a beautiful bird but has no place in the economic production of goose flesh. The standard weights, in pounds, are: Adult gander  $5\frac{1}{2}$ , adult goose  $4\frac{1}{2}$ , young gander 5, young goose 4.

#### WHITE ROMAN

The White Roman is a nonstandard variety. It is a popular goose in Europe, lays from 40 to 50 eggs, and is a good market goose. The Roman looks like the Emden, but is a little smaller.

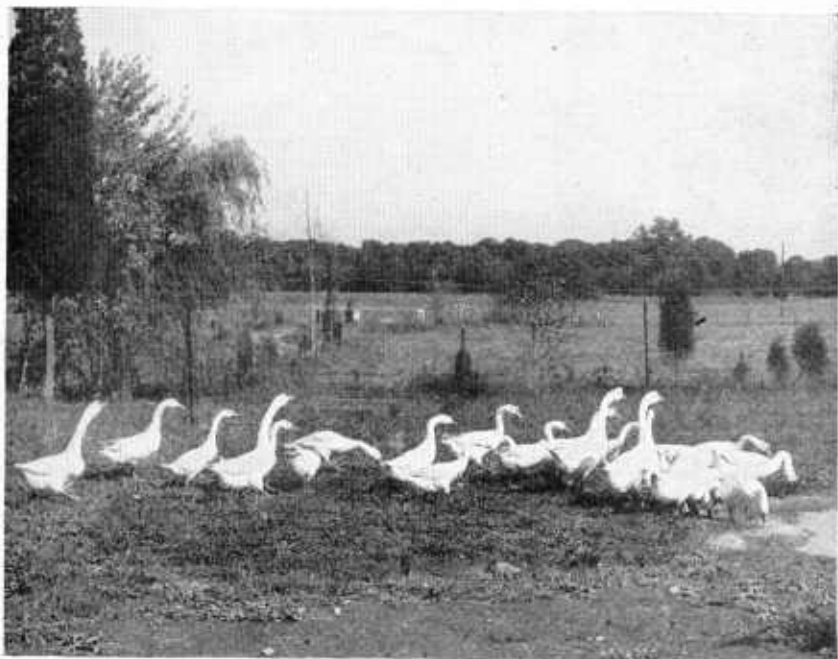
## GOOSE MANAGEMENT

Nearly all the geese in this country are raised in small flocks on general farms and only a few farms specialize in raising geese for market. Crosses such as the Chinese with the Emden or Toulouse, and the White Roman with the Emden, are sometimes used in the production of market geese. Some commercial goose production has been developed for selling purebred breeding stock, goslings, and eggs for hatching, and there is a very limited special fattening of geese.

The market for geese is not so general as it is for chickens, but there is a fairly good demand in many of the larger cities during the winter holidays.

Geese can be raised to advantage where there is good grass or pasture land, provided market conditions are favorable. Small flocks of geese can be raised in yards and fed grains with green feed or some roughage, but geese are grown more economically where green pasture is available. Geese are the closest grazers known and both mature geese and partially grown goslings can get most of their living from a good green pasture. If young growing geese do not get plenty of tender forage, they may be fed some mash to advantage. Pastures which stay green in any weather provide excellent grazing. It is important not to overstock land as to do so may kill the grass. If kept under sanitary conditions, geese are free from insect pests and diseases.

A body of water for geese is usually considered desirable during the breeding season (fig. 9). If there is no natural stream or pond, artificial pools or tanks may be supplied. Good breeding results are



12238-A

FIGURE 9.—Breeding flock of White Chinese geese in a pasture containing a small natural pond.

obtained with the Emden and with many other breeds of geese without bathing facilities. However, many breeders of the very large strains of Toulouse geese consider bathing places essential for best results.

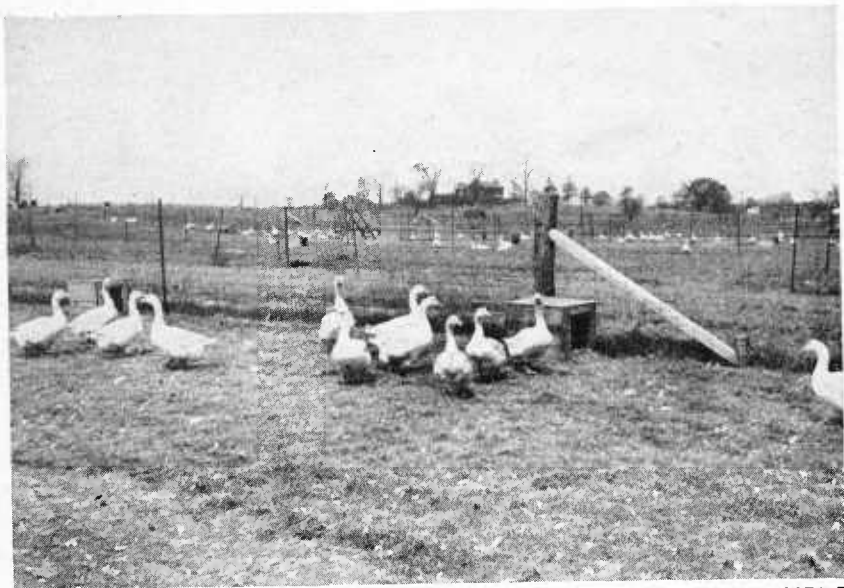
#### HOUSES AND NESTS

Except in extremely cold weather or in deep snow, mature geese will seldom use a house and do not seem to need any shelter. Colony poultry houses, open sheds, or barns are sometimes provided for shelter in the North. The houses should be kept clean. Small coops, barrels, and small open boxes are used for laying nests in the yards or on range (fig. 10). The laying coop shown in figure 11 is 3 feet deep, 6 feet long, 3 feet high in front, and 2 feet in back.

#### SELECTING AND MATING

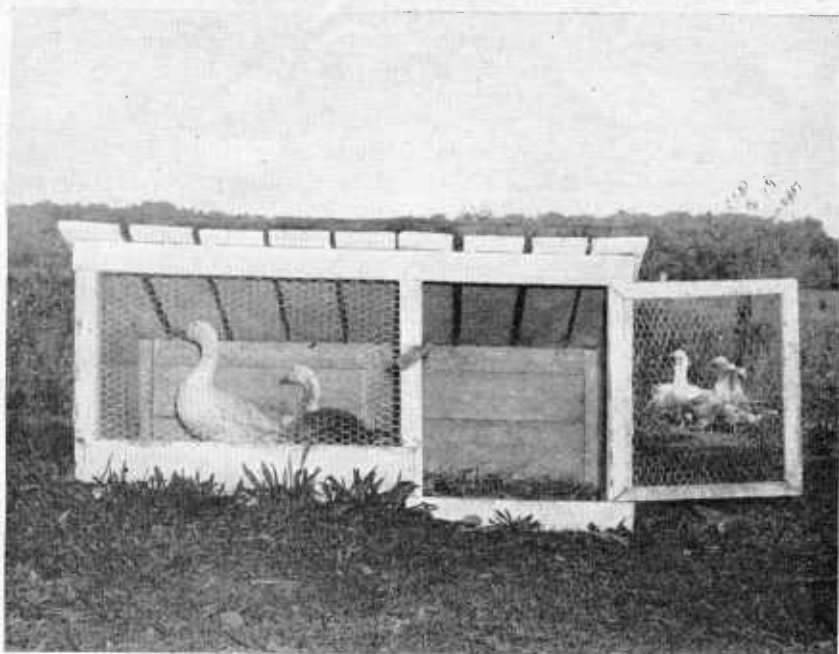
Geese are raised for meat production and breeders should be selected that grow rapidly and have compact, meaty bodies. All breeders should be vigorous and well developed. Extra large birds are not desirable, as medium-sized birds are usually the best breeders (fig. 12). There has been little pedigree breeding of geese, and egg production is very low in many flocks. Egg production can be increased by improved management practices which will make the geese lay earlier in the year. Marked improvement can be made in developing geese that mature early, have good viability and market quality, and that produce a larger number of eggs of good hatchability.

Breeding geese are usually kept together in good-sized flocks unless individual pedigree matings are used in which case the geese are put into separate pens 4 to 6 weeks prior to the breeding season. All the matings are usually made not later than December. Goose matings, however, are not usually changed from year to year except when the



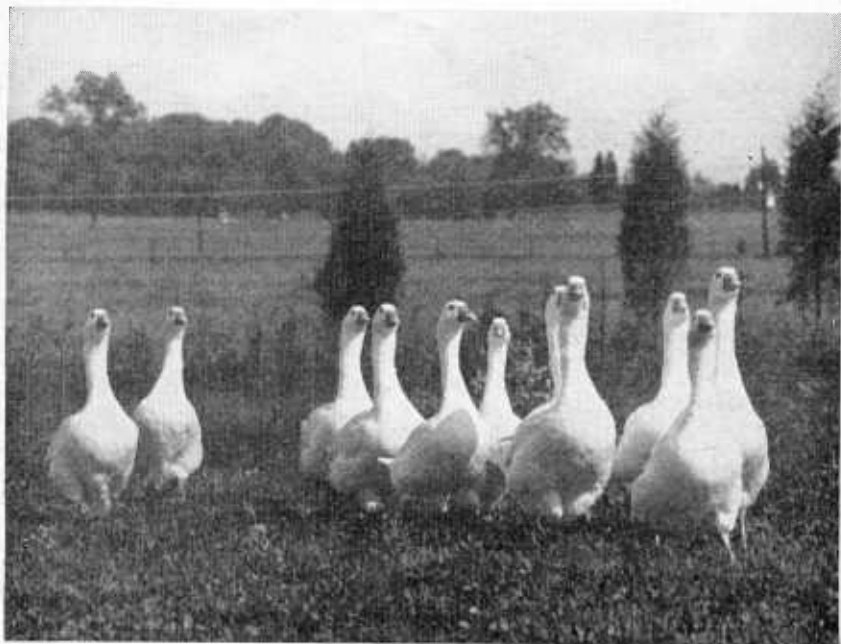
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FIGURE 10.—Nests made of packing boxes placed along the fences in breeding yards. Each mated group of geese tends to stay together near the nest.



12240-A

FIGURE 11.—Large laying nest for geese. The gander stays near the nest to protect the goose while she is laying.



81859-B

FIGURE 12.—This breeding flock of Emdens contains geese of good size which have well-developed, meaty bodies.

matings prove unsatisfactory. Geese are very slow to mate with new birds, making it difficult to make changes in established matings or to introduce new stock in the flock. If matings are changed, it is usually advisable to keep previously mated geese as far apart as possible. Since geese are easily disturbed, they should always be managed and handled carefully.

Sex is difficult to distinguish in grown geese by the appearance of the birds, until the geese are of breeding age. The gander is usually somewhat larger and coarser than the goose and has a high-pitched voice, while the female has a lower, deeper cry. The gander has a longer neck and larger head. The sex may be accurately determined by examining the sexual organs of breeding birds. Pressure around the vent of the female will expose a folded or wrinkled muscle, while in the male the stretched muscle will be smooth and the sexual organ will protrude. Day-old goslings may be sexed in the same manner as other kinds of poultry. When the cloaca is everted, the day-old male gosling has a distinct whitish papilla about one-eighth inch long which is only rudimentary in the opposite sex.

A gander may be mated with one to five geese, but pair or trio matings are most common and usually give the best results. Ganders of the small breeds may be mated with a larger number than those of the very large breeds. Just as good fertility was obtained in several matings of medium-sized Emden geese of four females to one male as was secured with matings of either two or three females. A young gander is usually mated with only one or two geese. The mature wild gander usually mates with only one goose. When mated, geese may be allowed to run in flocks as each mating usually stays by itself during the breeding season. Some ganders will mate with only one goose while others may mate with more than four geese and still produce good results.

Well-matured Toulouse and Emden geese will breed and produce good offspring in their first laying year, but very large breeds do not give best breeding results before their second year. Late-hatched or small birds hatched out of eggs laid by the goose during her first year are usually sold for market, while stock from older geese is kept for breeding. Young ganders make good breeders, but both sexes usually give the best breeding results when they are 2 to 5 years old. Eggs from young birds may be fairly fertile, but they do not hatch so well. Older males should be mated with young geese. Females will lay until they are 10 or more years old, and ganders may be kept for more than 5 years, but younger flocks are more profitable.

#### EGG PRODUCTION

Geese start laying in February, March, or April and often lay until late in June. Egg production depends on the breed as well as on the breeding and management of the flock. Geese generally lay in the morning. Most breeds start laying only as spring approaches, but the Chinese lay earlier and may start laying early in the winter. Laying mash is fed to get geese into egg production. In commercial flocks, artificial methods of hatching and rearing are used, and geese are fed so that they will lay in the latter part of the winter and produce eggs much earlier than most farm flocks. Egg production is maintained by feeding laying mash and by breaking up broodiness

promptly. Confine the broody geese away from, but in sight of, the ganders to break up broodiness.

In a large flock of selected Emden geese, the young geese averaged about 30 eggs their first year, compared with 40 or 50 eggs for the older geese. Fertility was good in both the young and the older birds, but the eggs from the older birds hatched 20 percent better than those from the young geese. The average egg weight for the young geese was from 5.5 to 5.7 ounces, while in the older birds the average was from 7.25 to 7.5 ounces. During the breeding season, the weight of eggs from geese in their first laying year increased slightly; from geese during the second breeding season, it decreased.

Flocks may be started by purchasing hatching eggs, day-old goslings, and either young or mature breeders. Most farm flocks of geese are produced by natural incubation and brooding. The use of incubators and brooders is increasing. Small farm flocks of geese are fed a laying ration to get them to start producing eggs during the latter part of the winter, about February in the northeastern section of the country, so that the goslings will hatch in March or early in April, by which time there is some green grass. Geese will continue to lay until the latter part of June, if not allowed to set. Commercial flocks of breeders are usually fed a laying mash by December where artificial methods are used for hatching and rearing geese.

Geese make nests on the floor of the house or in large boxes or barrels in the yard. Outside nest boxes should be at least 24 inches square. Packing boxes with the open side to the ground, and an opening in one end make good nests (fig. 10). Very crude nests out in the open are used for many farm flocks of geese. Straw is used for these outside nests as well as in the nests on the floor of the house (fig. 11). Inside nests about 18 inches square may be separated from each other by a tier of bricks or narrow pieces of thick lumber. One nest should be provided for every three females and the geese allowed to select their own nests. The nests in the yards are placed some distance apart. Geese may lay outside on the ground even when plenty of nests are provided, or two or more geese may want to lay in the same nest.

#### INCUBATION

Eggs for hatching should be collected twice daily in cold weather, probably until about March 1, and once daily after that date. They should be kept in a cool place to retard deterioration. Eggs for hatching should not be held any longer than necessary and they should be turned daily if they are held more than a couple of days. Hatchability falls off rapidly in eggs which are held longer than a week. Dirty or soiled eggs should be wiped with a damp cloth before they are set. If the eggs are not removed daily from the nest, the goose will usually stop laying sooner than if they are taken away. The desire to set can usually be checked by confining the goose for 4 to 7 days in a slat-bottom crate near the gander.

Many breeders prefer to set eggs under hens, turkeys, or ducks and allow the geese to continue to lay. Sometimes the eggs are set in an incubator for 2 weeks and are then placed under hens, ducks, or geese for the last 2 weeks. Turkeys and Muscovy ducks are larger and better than hens for hatching goose eggs. From 4 to 6 eggs may be set under a hen and 10 to 15 under a goose, depending on the size of the hen or goose and on the season of the year. Some goose raisers

advise turning eggs set under a hen by hand, while others say this is not necessary. Hens used for hatching goose eggs should be treated for lice and receive careful attention because the period of incubation of goose eggs is over a week longer than that for hen eggs.

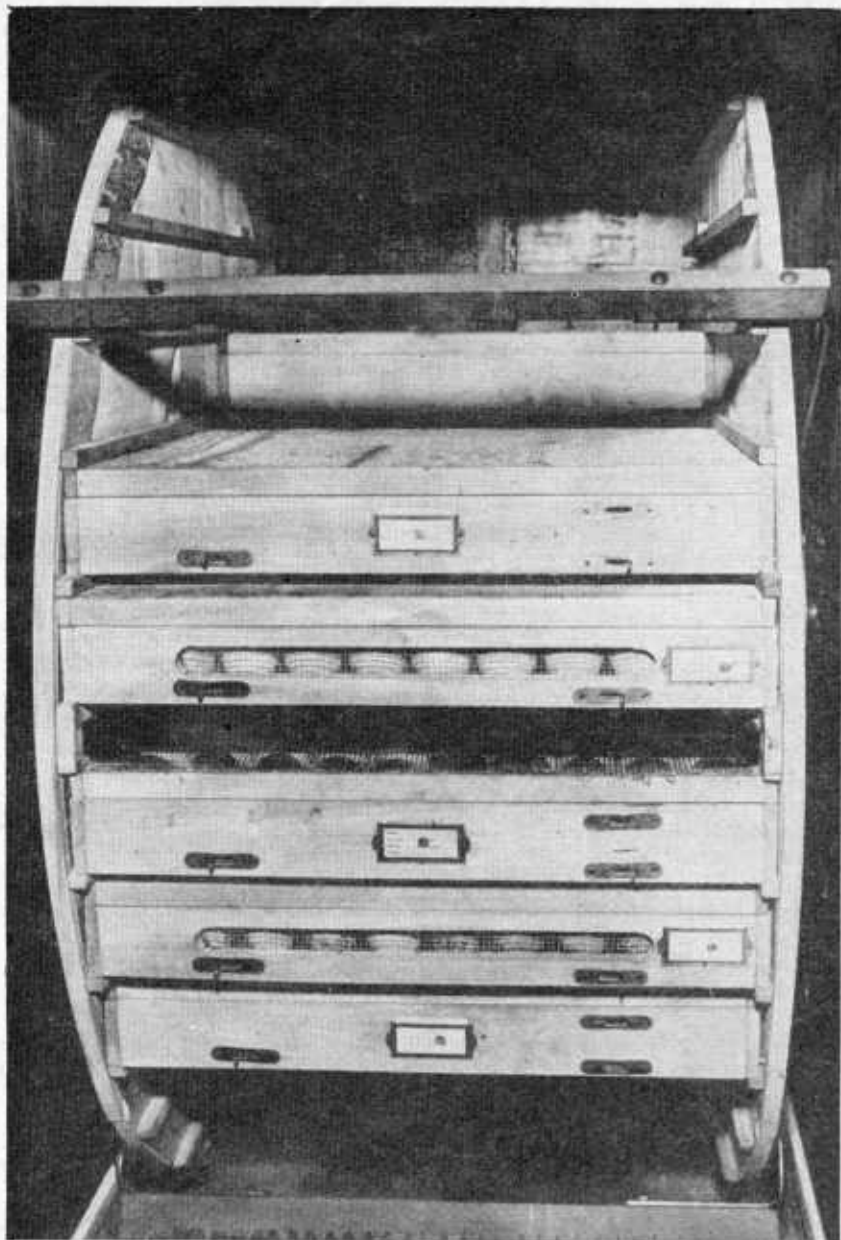
Additional moisture is needed where hens or turkeys are used for setting and is supplied by sprinkling the eggs during the incubation period and by having the nest and straw on the ground or on grass-covered turf. Daily sprinkling of eggs with lukewarm water is very important during the last 10 to 14 days of incubation. If the setting goose is provided with water for bathing, no additional moisture is needed. It is advisable to test the eggs during incubation between the tenth and fourteenth day and to remove infertile eggs and those containing dead embryos.

Goose eggs do not hatch as well as hen eggs in incubators and a hatch of 40 to 60 percent is all that many operators obtain. Fertility is generally good, usually about 90 percent. The period of incubation usually varies from 28 to 31 days, the larger breeds taking longer than the smaller breeds. The period of incubation for the wild (Canada) goose is 35 days. Emden geese eggs usually take 29 to 31 days to complete the hatch. Goslings hatch slowly and Emden goslings are usually left in the incubator until the morning of the thirty-second day. Goose eggs should not be incubated with chicken or other kinds of eggs as they have a different period of incubation.

Forced-draft incubators are usually operated at about  $99\frac{1}{4}^{\circ}$  to  $99\frac{3}{4}^{\circ}$  F. Directions for operating incubators should be obtained from the manufacturers. In some machines covered trays are used (fig. 13) so that the eggs will lie on their side during incubation (fig. 14). The eggs should be turned completely over, a turn of  $180^{\circ}$ , instead of the  $90^{\circ}$ -turn used for hen eggs. Some incubator companies make special incubators for goose eggs. In some makes of forced-draft incubators adjustments can be made to permit the complete turning of the eggs. Goose eggs are usually turned about four times a day.

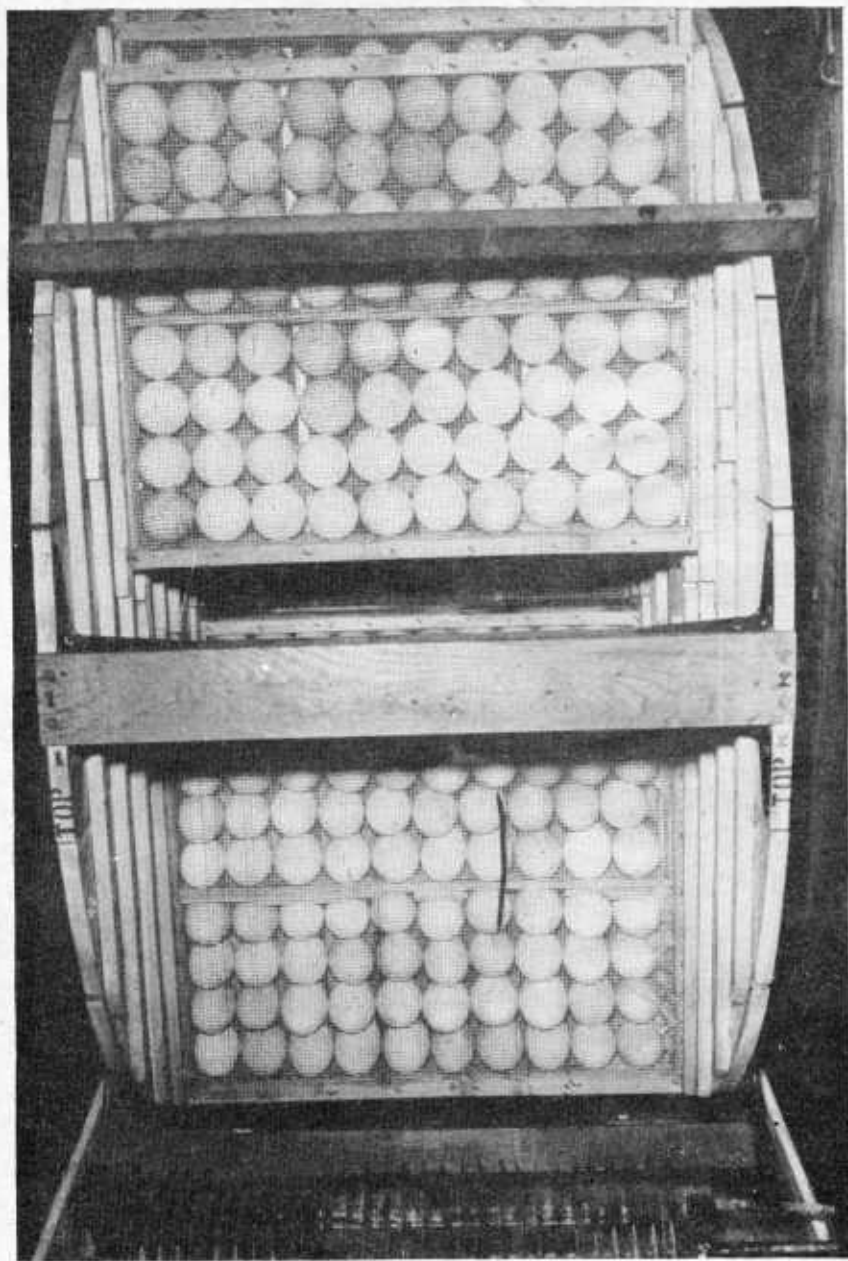
Eggs may be dipped in lukewarm water twice weekly for  $\frac{1}{2}$  to 1 minute, but should not be left in water more than a minute. Some operators prefer to spray eggs daily, using a garden sprayer with the nozzle hole slightly enlarged. A wet-bulb reading of about  $90^{\circ}$  is maintained until the twenty-sixth day when the moisture is increased to  $92^{\circ}$  to  $94^{\circ}$ . Test the eggs after 7 to 10 days and remove all infertile eggs and those having dead embryos. Eggs are usually transferred to hatching trays about the twenty-sixth day of incubation. Eggs that do not contain live embryos should be removed from the incubator as they may affect the other eggs.

Small, still-air incubators are used successfully for incubating goose eggs but require considerable labor. They are operated at a temperature of about  $102^{\circ}$  F. for the first 10 days and  $103^{\circ}$  for the rest of the incubation period, with the thermometer about 2 inches above the tray just clearing the top of the eggs. The eggs are placed on these trays in a horizontal position and are turned two or more times daily through the twenty-fifth day. To turn, shuffle the eggs by hand in the trays until they are completely turned over. High humidity should be maintained as described for forced-draft machines. This usually requires spraying or dipping the eggs and placing extra water pans in the incubators during the last 2 weeks. Some operators advise wetting a burlap sack and using this on top of the eggs during the last week.



89950-B

FIGURE 13.—Position of eggs when the trays are placed in a drum type incubator. Eggs are placed with the large end up and a wire mesh cover is provided for each tray.



80947-B

FIGURE 14.—One position of egg trays during the incubation period. The trays are rotated  $180^\circ$  which turns the eggs completely over. The cover on each tray prevents the eggs from falling out.

## REARING GOSLINGS

Geese may be raised by artificial methods and require only a short period in a heated brooder, depending on weather conditions. From 40 to 125 goslings may be put under the brooder stove in a 10- by 14-foot colony house. Most brooder flocks are of the smaller number, but flocks of over 100 have been brooded successfully and the flocks reduced in size at 2 weeks. The litter should be kept as dry as possible, but this is often difficult, especially in electric brooders. The brooder is started at about 90° F. and the heat is reduced gradually for 10 days to 3 weeks, depending on the weather. Sometimes extra heat may be supplied at night for a longer period.

The coop shown in figure 15 is 2 by 3 feet and will hold 25 young goslings. In mild weather such a coop may be used without any artificial heat. It may be equipped with an electric light bulb to provide heat for use early in the spring. This coop has a wooden floor which is kept covered with straw litter. The sliding screen is used to close the front of the coop at night. A runway is used to keep the baby goslings confined and should be moved every day or two onto fresh ground. The wire top has an opening at the end away from the coop.

A larger coop, 3½ by 5 feet, 2 feet 9 inches high in front and 2 feet high in the rear, is shown in figure 16. Goslings need frequent attention for the first few days until they learn to go into the coop or brooder when it rains. They should be confined at night and protected against predatory animals. Goslings grow rapidly and sufficient space should be provided to prevent crowding.

Goslings hatch slowly, and the hen or the goose should usually be left alone at hatching time unless some of the eggs hatch much earlier than others, in which case the first arrivals may be removed and kept warm until hatching is completed. When hatches come off at the same

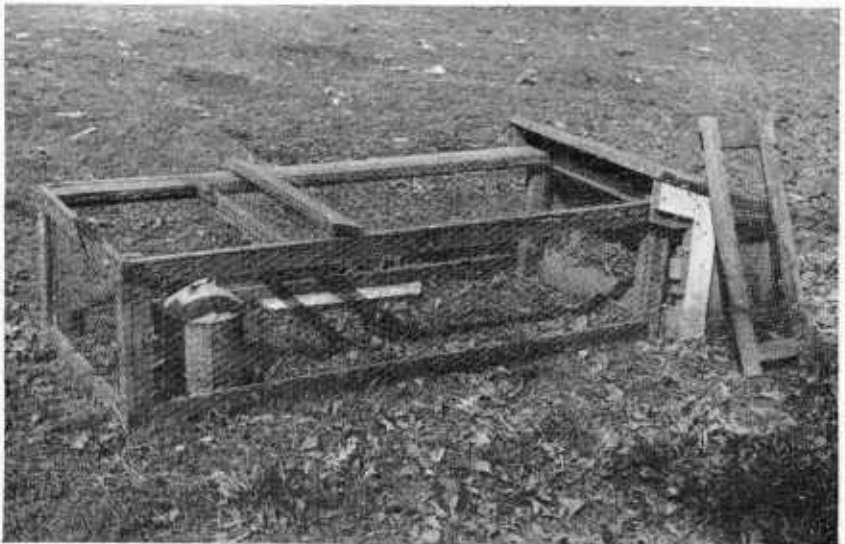


FIGURE 15.—Brood coop for 25 young goslings. The coop has a wooden floor and a portable wire runway.



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FIGURE 16.—A larger and more substantial brood coop. An electric light in this coop provides heat at night in cool weather.

time from hens and geese, all the goslings may be given to the geese which make the best mothers. If two hens hatch at the same time, one hen may be able to raise all the goslings that survive. One hen can raise five goslings. The web of the feet of the newly hatched goslings may be marked with a harness punch or a V cut in the web to keep a record of their age and breeding. Goslings should be confined to small yards and given close attention for the first few days. In mild weather the hens may only need to brood the goslings for 10 days to 2 weeks, after which the goslings can get along without heat.

When goslings are brooded by natural methods, good-sized, water-proof coops with board floors should be provided. Goslings should be protected from rain for the first month. To keep baby goslings dry, confine them in the early morning until the grass is dry, for 2 or 3 weeks. Goslings are not usually allowed to go into the water until they are partly feathered. Goslings apparently drowned in a cold rain may sometimes be revived by drying in flannel near a fire or warmed by being put into an incubator. The hen should be confined to the coop for about 2 weeks and the goslings allowed to go out at will. Dry, clean litter should be placed in the coop. Natural methods of brooding and rearing poultry are described in Farmers' Bulletin 1538, Incubation and Brooding of Chickens.

Goslings do best where they have plenty of tender green feed and are allowed to graze after they are 3 or 4 days old. The coops should be moved frequently to provide fresh grass for the growing goslings. After they are 2 to 3 weeks old, if they have tender green grass, they will need only a small amount of feed. When on range,

young goslings need protection from their enemies, as well as some attention to keep them from getting stuck in holes or too wet (fig. 17). It is better to keep growing goslings separate from older stock. Shade should be provided in hot weather.

#### FEEDING GOSLINGS

Goslings should be fed as soon as they are put in the brooder or as soon as they are hatched if set under hens. They may be started on growing pellet mash or on commercial duck or chick starting mashes containing about 18 percent protein. A starting mash may be made of 30 percent ground corn or corn meal, 20 percent pulverized oats, 20 percent wheat middlings, 10 percent bran, 5 percent meat or fish meal, 4 percent steamed bonemeal, 5 percent alfalfa leaf meal, 4 percent soybean meal, 1 percent limestone, 1 percent salt, plus 0.5 percent vitamin

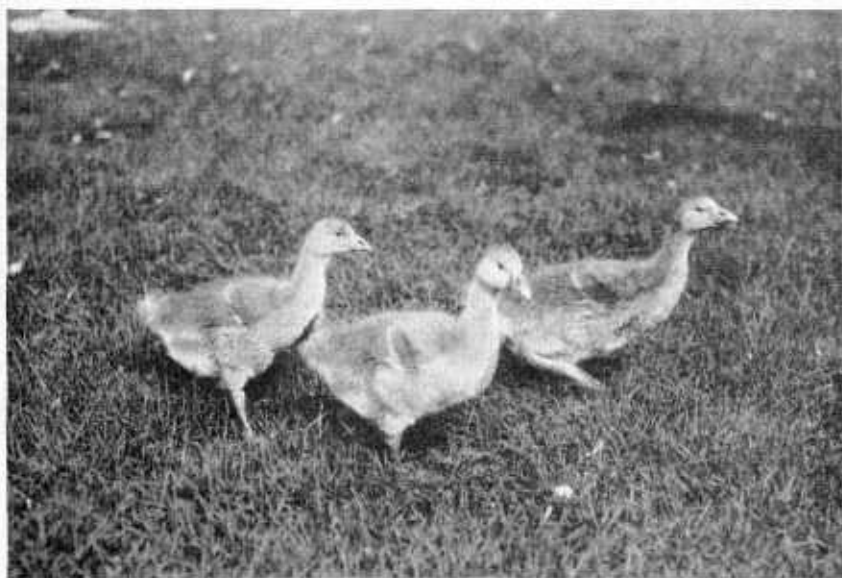


FIGURE 17.—Toulouse goslings about a month old.

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A and D feeding oil. Tender green feed, such as chopped grass, lettuce, or cabbage, should make up a considerable part of their feed. The best results are secured where goslings can eat tender grass with the growing mash. This mash is usually fed slightly moistened with water or skim milk. Plenty of fresh, clean drinking water should be supplied.

The starting feed may consist of corn meal and rolled oats mixed with an equal amount by weight of chick starter mash. The young goslings are usually fed three or four times a day for the first week and two or three times during the second to fourth week. They are given what they will clean up in 15 minutes, care being taken not to overfeed. Fine, sharp sand or fine grit should be kept before the birds. The water containers should be deep enough that the goslings can clean their bills but should permit the birds to get only their heads in the water.

After 2 or 3 weeks, if the goslings have plenty of tender green feed such as that found on a good grass range, the grain feeding can be greatly reduced. The amount of grain needed depends on the quality and amount of green feed consumed. Some grain feeding is usually advisable although many farm flocks of young geese are raised on grass alone after they are 2 or 3 weeks old. A commercial chick growing mash or growing mash of pellets may be used. A growing mash may be made of 30 percent corn meal, 24 percent wheat middlings, 15 percent bran, 12 percent ground oats, 9 percent soybean meal, 5 percent meat or fish meal, 3 percent ground bone, 1 percent limestone, and 1 percent iodized salt.

#### REARING GEESE

After goslings are 6 weeks old, they are usually raised largely on green feed alone, but enough growing mash should be fed to keep them growing steadily. A light feeding given regularly late in the afternoon helps to bring the goslings back to their coops. Houses are usually not needed after the young geese are 6 to 8 weeks old. Dry pastures or poor range may be supplemented by succulent green feed such as alfalfa, oats, clover, rape, rye, barley, beets, cabbages, greencorn stover, or other green feeds. Pasture grasses, alfalfa, and clover all make excellent range for goslings. State colleges of agriculture can furnish information on green crops which may be raised to advantage in your section.

Growing goslings need plenty of clean drinking water. Waterers, such as hog fountains, are suitable for furnishing plenty of water for drinking, and prevent geese from getting into the water container. Some shade is desirable on the range and can be provided by trees, or growing crops such as corn and sunflowers. A low shade cheaply constructed of posts and wire, with a covering of straw, makes a suitable shelter from the sun. This may be moved to different parts of the field and the grain fed in various places so that the geese will range over the whole area.

The number of young geese that may be kept on an acre of land depends on the quality of the range and the amount of grain fed. A group of 186 goslings raised on 5 acres of grass required mash feeding after 8 weeks of age to keep them growing rapidly. Another lot of 42 goslings raised on 1 acre of grass alone after they were well started did not continue to grow well after 7 to 10 weeks of age. From 15 to 25 geese per acre may be kept on good pasture in the summer and fall on grass alone, but some grain feeding is usually desirable.

Geese will eat any tender green feed and are sometimes allowed to range on growing crops to help keep down weeds. They cannot be used in growing crops such as corn until the plants become fairly large and tough, but are used in cottonfields where they are not likely to injure the young plants. Where they range on pastures with livestock, or in orchards, they tend to keep down the coarse grasses and weeds. Geese are being used with good results to help keep weeds out of strawberry fields. Both young and older geese may be put in the fields in the spring while the weeds are small, using five to seven geese per acre.

They may be kept in the strawberry fields until the berries are nearly ready to ripen; they then require a separate range. After the berries

are picked, the geese are returned to the fields and left there until the latter part of the summer or into the fall. Manage geese to prevent them from injuring young strawberry plants. Move the feeding place and waterers every few days. If geese are kept in one place too long, they are likely to destroy older plants. It is usually advisable to feed grain at the rate of about 1 pound per day for five geese in strawberry fields. Additional control of weeds not eaten by geese may be necessary.

Fences 3 to 4 feet high will keep geese confined in large fields. The flight feathers of one wing may be clipped to keep geese from flying over low fences.

#### FEEDING OF BREEDING GESE

Geese are kept generally where they have a good grass range or pasture and, except during the winter months and early in the breeding season, usually pick up most of their living. The pasture may be supplemented with light feeds of grains or laying mash daily, the necessity depending on the condition of the pasture. During the winter, when green pasture is no longer available, they should have grain, laying mash, and roughage. Grain is much more fattening than laying mash; free feeding of corn may make the breeding stock too fat. Oats mixed with corn, wheat, or barley, make a desirable mixture to feed to breeding geese. Geese are sometimes fed corn on the cob. Part of the feed in winter should be roughage, such as shredded vegetables, clover, or alfalfa hay, chopped-corn stover, or good silage, free from mold. Green corn stover makes a good summer feed.

Laying mash should be fed prior to the breeding season in order to get the geese to start laying. Small farm flocks are usually fed freely on mash to get the geese to lay so that the first goslings will hatch by the time there is green grass for grazing. Breeders using artificial incubation and brooding methods make their geese lay earlier by feeding them laying mash in December or January. Chinese geese will lay early in the winter if fed for egg production; heavier breeds will usually come into egg production in February or March. The laying mash is usually fed once a day and may be fed either moist or dry.

The laying mash may be made of 20 percent corn meal, 20 percent pulverized oats, 19.5 percent ground wheat, 19 percent soybean meal, 5 percent alfalfa leaf meal, 5 percent steamed bonemeal, 4 percent meat meal, 4 percent dried whey, 2.5 percent ground limestone, and 1.0 percent salt, plus 0.5 percent cod liver oil or vitamin A and D feeding oil. About 4 ounces of mash may be fed with about an equal quantity of mixed grains daily per bird. Vegetables, alfalfa hay, or some roughage is added to the ration when the geese do not have green feed or grass. Another good mash is made of two parts each by weight of ground wheat, corn, and oats, one part each of ground barley and bran, and one part fish meal or meat meal. This is used with a light whole-grain feeding of barley, wheat, oats, and corn. Commercial laying pellets, containing about 18 percent protein for hens or ducks, are used by many of the larger breeders. Farmers keeping a few geese often use regular hen laying mashes.

The grain required by geese depends on the kind and condition of the pasture. A breeding flock on a small but fair grass range throughout the year and fed freely on grain ate 100 pounds of feed per bird

from January 1 to July 1. These birds were fed a pelleted mash (18 percent protein), such as is fed to ducks, and a mixture of grains.

Oystershell and some insoluble grit should be kept before geese. Drinking water should be available at all times and is best supplied in small tubs or buckets placed on the outside of the fence from the yard so that the geese reach through to drink, and cannot get their feet in the water. Large drinking fountains or hog waterers are suitable for good-sized flocks of geese.

### FATTENING FOR MARKET

Geese are usually fattened 3 to 5 weeks before they are marketed. They fatten best in cool or cold weather. When birds have been raised largely on grass without grain, they are likely to be thin. They must be fed freely on grain and mash to become fat for the holiday markets. Fattening improves the quality as well as the quantity of the flesh. Females are usually saved for breeding; surplus young males and older geese no longer suitable for breeding are fattened for market. Stock to be saved for breeding should not be fattened.

Young geese are ready to be fattened for market when fully feathered or when the long wing feathers reach the tail. Some young geese are marketed at 10 to 13 weeks of age as green geese and will weigh 10 to 12 pounds, live weight, when fed for rapid growth (fig. 18). For several weeks after this age, geese are usually not so fat and have many pinfeathers which are difficult to remove. Growth after 10 to 13 weeks is very slow compared with the rapid growth of young geese.

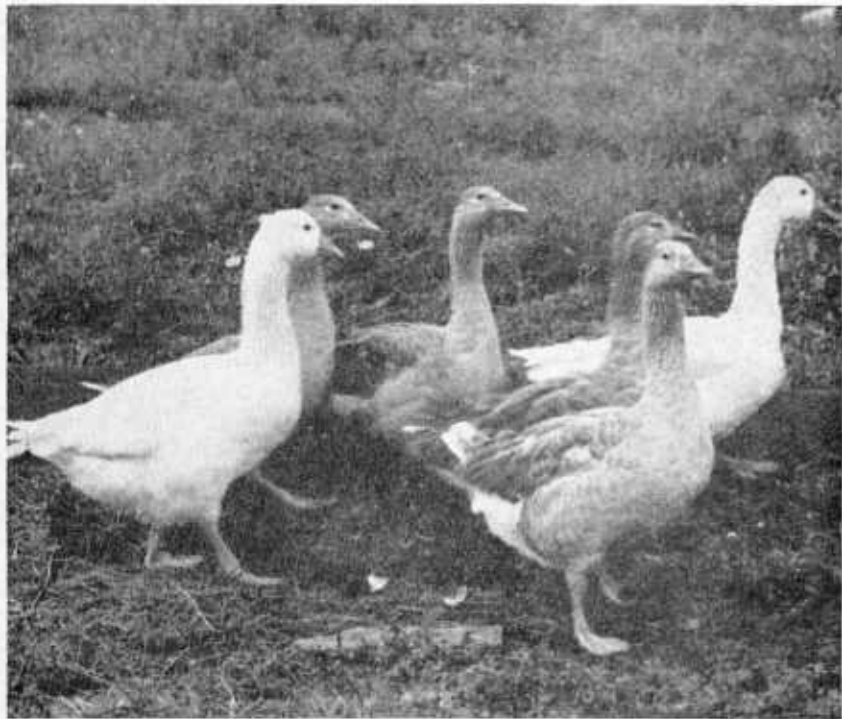


FIGURE 18.—These Pilgrim geese demonstrate the rapid growth and development attainable in the first 10 to 11 weeks.

If geese are hatched early and are ready for market much before Thanksgiving, they may be put into cold storage and marketed later.

Farm geese are usually sold late in the fall for the holiday markets when they are 5 to 6 months old, and usually weigh 11 to 15 pounds alive, depending on the breeding. Geese on grass range can be carried to this heavier weight without much additional cost.

Feed the birds a crumbly mash three times daily, or two feeds of mash and one of grain such as corn, oats, or barley. Feed them at regular intervals. They should be allowed very little exercise and may be fattened in small yards with 20 to 24 in each flock or the entire flock kept on restricted range. A fattening mash may be made of 45 percent corn meal or ground corn, 35 percent ground oats, barley, or wheat, 10 percent wheat middlings, 5 percent soybean meal, 3 percent meat meal, 1 percent ground limestone, and 1 percent iodized salt. A little roughage such as alfalfa or clover hay, corn silage, or pulped vegetables should be provided. If geese are confined to the house, plenty of bedding such as wheat or oat straw should be used to keep the pens clean as well as to provide roughage. Plenty of drinking water should be available at all times in receptacles arranged in such a way that geese can get only their heads in the water. Pans or tubs may be placed just outside of the fence.

Special fattening methods in which geese are fed finely ground mash individually by hand, by machine, or in individual crates are used to some extent in European countries. These methods usually require too much labor to be practical in the United States. A fatty condition and a greatly enlarged liver may result from special fattening and force-feeding methods. High prices must be obtained for geese fattened by such methods to pay for the cost of the extra labor involved.

### **KILLING, PICKING, AND MARKETING**

When geese are well fattened they are ready to be marketed. They are killed and picked in the same manner as other kinds of poultry, but are much more difficult to pick than either chickens or turkeys. Care should be used in handling geese at killing time as the flesh bruises very easily and bruised spots detract from the appearance of the dressed bird. All geese should be starved for about 12 hours before they are killed, but water should be kept before them.

To kill a goose, hang it up by its feet and cut the jugular vein in the mouth just below the base of the skull with a 4-inch, narrow-bladed knife. As soon as the goose starts to bleed, loosen the feathers by sticking the knife through the groove in the roof of the mouth and rotating the point of the knife in the rear lobe of the brain at the base of the skull. The feathers may also be loosened by a sharp blow on the back of the skull with a heavy stick. A cup is usually attached to the lower jaw to catch the blood.

Dry picking produces a nice-looking carcass and leaves the feathers in good condition, but semiscalding or steaming methods of picking are much easier. In semiscalding, the goose is immersed and agitated in water heated to about 150° F. for 2 to 2½ minutes, or until the feathers pull easily. The time and temperature are determined by testing. Some commercial operators use temperatures from 168° to 190° F. for 18 to 25 seconds and also dip the roughly picked geese in melted wax. A detergent

may be used in the water to hasten the thorough wetting of the feathers. Geese may be steamed on a rack or burlap sack over boiling water. The breast is steamed first, the back next, and then the sides. Steaming should not last over 3 minutes and the goose must be turned to prevent scalding. Many farmers, holding a goose by its feet and head, dip it in scalding water (just under boiling temperature) for 2 to 3 minutes and then wrap it tightly for about 5 minutes in a burlap sack or blanket to permit the steam to work thoroughly through the feathers. To determine the length of time to scald, pull out some of the feathers. The large wing and tail feathers are usually picked first and kept separate from the body feathers and down. Goose feathers should be kept separate from chicken and duck feathers.

On farms, dry-picked feathers are dried in burlap sacks hung in a loft, or are spread out in a dry, well-ventilated room and stirred occasionally. When dry enough, they are shipped to market.

Although plucking feathers from live geese used to be a common practice, this has been almost entirely discontinued and most goose farmers consider it harmful to the birds.

After geese are picked, they are usually washed and put into cold or iced water to cool. Birds may be air-chilled, hanging in a temperature of 30° to 36° F. Several hours are required to chill the carcass thoroughly, depending on the temperature of the water or the air.

Geese are graded for fleshing and general appearance. United States Grade A geese are full-fleshed birds of any age or sex, which are well dressed and free from deformities, bruises, and dressing defects. U. S. Grade B birds are only well fleshed or they may be full-fleshed with slight dressing defects or minor deformities.

Boxes or barrels are used for shipping dressed geese to market. Boxes are better than barrels for packing dry-picked geese. In some markets dry-picked geese are preferred, but in other markets no difference is made in prices of scalded and of dry-picked geese. Head-wraps of heavy waxed paper are frequently used to cover the heads of dry-picked geese. Dressed geese packed in barrels with ice are often shipped to nearby markets. Barrels are packed with alternate layers of ice and of geese, with a layer of ice in the bottom and another at the top.

Geese are usually sold alive either to live poultry buyers who collect geese at farms, or to poultry dressing and packing companies. Most geese are marketed in the fall and winter, at which time they are free from the small pinfeathers. This makes them easier to pick clean. When the weather gets cold in the fall, geese put on considerable fat. Large, fat geese are in the greatest demand and bring the best prices. Some families prefer less fat in the cooked goose and draw off much of the fat as grease during the cooking period. Goose flesh is largely dark meat. Geese lose about 10 to 13 percent of live weight in killing and picking, small geese losing a slightly greater percent than large geese. Geese dressed and drawn with head and feet removed lose from 25 to 30 percent of their live weight.

### **MARKET DEMAND AND PRICES**

Large cities having a considerable cosmopolitan population usually make the best markets for geese. This trade will pay more for geese with yellow or orange-colored bills, such as the Emden, than for those that have black knobs or black bills, or both.

Wholesale quotations on dressed geese from western markets are usually higher per pound than on heavy hens, but lower than on turkey hens and on capons. Geese usually sell for about the same price per pound as large male turkeys. Geese bring the highest prices during the winter holidays.\* At that time, capon and turkey hen prices on the New York market are usually about 20 to 25 percent above goose prices, while heavy hens (fowls) are about 20 to 30 percent below the price of geese. Goose prices usually go up in November and then drop rather sharply during January. Prices of hens and turkeys show much less fluctuation than prices of geese.

Goose feathers are valuable and bring higher prices than any other kind of poultry feathers. As this country usually imports a large quantity of goose and duck feathers, prices of goose feathers are much higher during war periods than in normal times. White feathers bring much higher prices than colored feathers.

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